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Older people and their use of the internet

AN INSIGHT PAPER written for Nominet Trust by David Sloan and Sergio Sayago[1]

1 With the support of the Commission for Universities and Research of the Ministry of Innovation, Universities and Enterprise of the Autonomous Government of Catalonia and the European Union.

Introduction

If we start from a general assumption that the internet has had an overwhelmingly positive impact on society, and that access to the internet is regarded as a utility – or in some circles, a basic human right – in the same way as access to clean water and a reliable supply of power – then we should assume that this positive impact is one that should be shared across society. This is particularly so for those groups at the greatest risk of social exclusion and financial hardship.

One of the great paradoxes of the emergence of the internet as a change for social good is that it can also easily lead to increased social exclusion. The widely accepted social and financial benefits that the internet can offer as a nearly-ubiquitous communication medium are denied to those members of society who do not use, or cannot use, the internet. This is recognised by the Manifesto for a Networked Nation 2010 – the policy document setting out an argument and supporting strategy encouraging more UK citizens to become internet users, produced by Martha Lane Fox, the Government-appointed Digital Champion. In this Manifesto, the particular challenge of engaging and supporting groups at most risk of exclusion – including older people – is recognised, and some recommendations are made to address this challenge through activities that inspire, support and reward engagement with the internet.

To some extent, the focus on age as a means to differentiate groups of internet users can be misleading and misguided, overlooking the enormous diversity that exists within a group of people of a particular age – a topic we will return to later. What calendar age does give us though, is an indication firstly of an individual's life experience in terms of events lived through, innovations that have taken place in the world, and changes in social norms that have taken place over time.

Given that the targets for digital engagement set out in the Manifesto for a Networked Nation focus largely on the working population – including the target of ensuring that citizens retire with an appropriate level of internet skills – "working age" is a politically significant definition, and therefore our justification for this report's focus on older people. The upper limit of "working age" is, at the time of writing, 65; however this is almost certainly likely to rise over time, in response to the increase in life expectancy and resultant financial implications on the state pension system in the UK. So, in this report we will not set our own definition of older people in calendar age terms. Instead, where appropriate, we define and distinguish other characteristics of older people that are meaningful in understanding and addressing the challenges of supporting and sustaining successful internet use.

Context

This report has been written to complement the **State of the Art Literature Review on Older People and the Internet**, commissioned by Nominet Trust and published in October 2011. We have been particularly motivated to consider directions in which activity and policy should move in order to help ensure that as many older people as possible can become successful internet users. To help reflect on our own experiences of working in the field of older people and ICT and to distil these experiences into the opinions expressed in this report, we spoke to over 15 older technology users of varying levels of experience. We make no attempt to present this consultation as engaging with a representative sample of older people, but instead use this engagement to provoke our own thoughts into the directions where research and policy might best be headed. We also spoke to a number of senior research colleagues working in the same field, and while their views are reflected in some of the content of this report, ultimately what we present is our own articulation of the challenges we face and the directions we can take.

In producing this report, we detected a sense that much published and ongoing research into the ways in which internet technology can better support quality of life amongst older people is limited to confirming current knowledge rather than significantly adding to it. Therefore, one objective of this report is to attempt to provoke and stimulate research activity in new directions, with the hope of maturing policy and activity, while underlining those established problem areas where more research remains a priority.

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Thoughtful rather than prescribed use of the internet

It is generally assumed that older people will (eventually) embrace the internet, as its ubiquity and opportunities can, and should, improve their quality of life. Messages from government and the media tend to present a co-ordinated set of arguments for adoption, citing a familiar list of activities that internet use enables and benefits that can be realised. However, older people won't embrace ICT just for the sake of doing so. Contrary to popular stereotypes or taken-for-granted ideas, we show provocative examples of their very thoughtful attitude towards ICT use.

Independent living? Big-brother living? Is this the independence they want?

There is strong research interest in the role of the internet in supporting Independent Living. However, our conversations with older internet users can be summarised as: "sensors, video cameras… is that the independent living we want?" There is an appreciation amongst older people that technological developments such as smart homes could be extremely useful for others less capable themselves, for example those who are housebound:

> **"Oh yes, I think this would be very good for these people. This person's in a wheelchair and her family, well, you know, they're all struggling. These smart homes are a great idea for these people."**

Yet, older people are less likely to see these benefits as applying directly to themselves, because they:

- want to **remain independent for as long as they can**: "I'd live in these homes if I had to. I don't want to bother people, but not now."
- perceive a serious **threat to their privacy**: "This is like having a spy at home."
- consider **technologies to be replacing humans**: "Where are the people? You know, someone you can talk to if a sensor doesn't work. Replacing people by technology is not good at all."
- do not feel in **control of the technology**: "What would happen if there is a power cut? Think about that!"

A special computer for us? No, a better computer, please!

There is growing interest in making computers and the internet more accessible for older people. This is in some part driven by a combination of age-related capability change, discussed later in this report, and a perceived lack of technical skill or enthusiasm amongst older people. However, in discussions, **none of our participants either wanted a special or simplified computer**:

"A special computer? No, I mean, I want to use this, which is what I have at home, and you see people using it everywhere."

There is also a reluctance to be seen to **hold up technology progress**:

"No, I don't think that a simplified or a special computer for us is a good idea. New operating systems allow us to do things that we couldn't do five or ten years ago, but it is true that they are more difficult to use. The problem is this: new technologies should be better and easier to use, but computers aren't a piece of cake."

Instead, two main accessibility barriers that prevented them from having a positive experience of using ICT are:

- Plain English: "We need to understand what we read; plain English is mostly needed."
- Clear and easy-to-remember routes: "I've seen (name of participant) struggling to remember how to copy a file from the computer to his pen drive. He has been using the computer for years, and he isn't stupid at all. The routes for moving things are unclear, inconsistent. We need better, more consistent, ways of going from A to B."

Independent living or supporting creativity and communication?

As articulated by one researcher we spoke to, do we want to enable "independence"? Or do we want to give an older person control over their dependencies? In other words, **how do we ensure that the internet can be a tool to strengthen social relationships, rather than replace them with interaction with a computer screen?**

A website that allows someone to independently order and receive groceries overcomes many problems relating to difficulties in getting to a physical store, selecting and purchasing appropriate goods and bringing home a week's shopping. However, the social interactions that take place during the trip (chat with friends on the bus and staff in the supermarket) are replaced by a brief chat with the delivery driver, and this is not what our older internet users wish to happen:

"I personally think this is very convenient, but it can potentially reduce your social contact with people. I force myself to go out and buy my food or clothes. There will be a day when I won't be able to do it, but until then, I'll go out."

So, to what extent should research policy and activity focus on helping older people use the internet for creative, socially enriching activity? The classification of an older person's acquaintances (for example family, friends, former colleagues) and the resulting social contact that the person wishes to have with each classification is something that may not be

appropriately supported by a social networking website, while the very action of **sharing information with a potentially unknown audience, perhaps inadvertently, may be off-putting**. The new social etiquette of dealing with Facebook pokes, Twitter mentions, LinkedIn invites and other direct communication activities can be difficult to map to more traditional social etiquette that is familiar to an older person but perhaps less common in younger generations. Can such messages be ignored? Should they be responded to? How disruptive is this to successful engagement of older people with the internet as a communication tool, and how can we support appropriate filtering and management of digital communication?

This social issue is closely related to trust – we are all familiar with stories of spam email that at best is a nuisance but at worst can lead to situations where individuals experience significant financial loss. The process for detecting and dealing with spam is dynamic, as spammers find new ways of targeting vulnerable people; the knowledge that this practice goes on and the profile of internet security in popular media may be enough to discourage some older internet users. **Better ways of managing unsolicited internet communication** may therefore have particular benefit for building up trust amongst older internet users, but a wider concern is to ensure that social networking technology enables appropriate management of communication in a manner that is sensitive to social etiquette familiar to different generations.

While online gaming continues to thrive as an activity, we need to **know more about the role digital games can play to improve the quality of life of older people**. From a medical perspective, game playing as cognitive training or for rehabilitation has received research attention, but can game playing be of benefit to older adults for other aspects of their quality of life, such as learning or keeping in touch with people? More understanding of digital games designed with older people and that are **worth** playing by them is needed; the WorthPlay project[2] has begun to address this area.

Findings of research with older people need to be generalised with care

The diversity in circumstance and capability of a population who happen to share a particular calendar age is well understood, and has been widely documented in medical and cognitive science literature in particular. The Manifesto for a Networked Nation 2010 acknowledges the diversity that exists within a general definition of older people, and emphasises the need to take this diversity into account. Yet **many published research studies and reports focus on age and technology use without providing any meaningful data on the participants involved**, beyond calendar age.

2 http://www.fgcsic.es/envejecimiento/en_EN/activities/proyectos_cero_ageing_award

That there is wide disagreement over definitions of the age at which 'old age' begins, means **comparison between related studies involving older people can be difficult**. Additionally, where research, much of it adopting an experimental approach (i.e. conducted in laboratories), focuses exclusively on an older population **without a control group of younger people for comparison**, any conclusion that associates performance characteristics or preferences with age may be unsafe[3].

Many older people who participate in research relating to ICT use are likely to be (highly) motivated to do so because of, amongst other reasons, an interest or career in technology, education or research. The participation from motivated older people is extremely valuable, and needed, especially to conduct more research in out-of-laboratory conditions, and over extended periods of time. Their involvement, however, needs to be channelled appropriately – taking advantage of **the informed perspective they bring, but not presenting them as representative of older people as a whole**.

Segmentation of older people in technology research should take place in a meaningful way, informed by **a number of different attributes**, such as educational attainment, prior experience with ICT, attitude to computer use, level of social integration or isolation, and capability, in terms of visual, auditory, physical and cognitive capabilities. We will come back to this latter set of attributes later.

We recognise that research involving older people can present challenges in recruitment and in selection of methods[4], and that, of course, not only is there merit in even the most informal involvement of older people in ICT research, but **a lack of appropriate involvement of older people invites serious questions about the value of the research**.

However, it is essential that there is robustness in choice of research methods and recruitment of participants. Assessment of this robustness should form part of evaluation and selection of candidate research projects, and should be reflected in any project output – and policy decisions that are made on the basis of that output.

3 A critique of involving representative users in Human-Computer Interaction research is provided in Sears, A. and Hanson, V. (2011) Representing Users in Accessibility Research. Proceedings of ACM Conference on Computer-Human Interaction (CHI) 2011.

4 Useful advice on involving older people in human-computer interaction research is provided in. Dickinson, A., Arnott, J. and Prior, S. (2007) Methods for human-computer interaction research with older people. Behaviour & Information Technology, Vol.26, No.4, July-August 2007, pp.343-352, and for conducting focus groups with them in this recent book, Charness, N., Demiris, G. and Krupinski, E. (2012) Designing Telehealth for an Aging Population. New York (USA): CRC Press. Taylor & Francis Group.

We should understand more about motivation for internet use, but accept it is not for everyone

We echo calls for better understanding of and sensitivity to what motivates older people to become, and stay, successful internet users. The Manifesto for a Networked Nation 2010 identifies that strategies for encouraging adoption of the internet need to be tailored to specific groups, and recommends an approach that highlights how the internet can help people achieve real-world and meaningful goals relevant to their own lives. This should involve **research on experience of using technology over time** - research that seeks to understand the reasons behind successful adoption, and continued use, over extended periods of time. Whereas there is growing Human-Computer Interaction (HCI) research addressing ICT use over time[5], very little research with older people has addressed it thus far[6].

Along with a better understanding of what motivates older people to go online, and use the internet in their daily lives, we need **a more acute awareness of the circumstances that may exist that will make someone unwilling to go online**. We must acknowledge that not everyone wants to go online. The complexity of the internet as a technology and perceptions of difficulty, plus other fears, may be sufficient to repel all efforts at persuading certain people to adopt. While research can help to reduce some barriers, **research activity and policy should avoid using inappropriate arguments for converting non-users to users**, and help us understand better where efforts of persuasion may not bear fruit.

We realise there is, of course, a political sensitivity to this observation, as digital engagement of citizens benefits the Government in terms of cost savings arising from moving delivery of services to online-by-default, in using the internet as the default platform for citizen engagement in policy setting exercises – and potentially voting. **The internet can be treated as a dominant platform, but alternative mechanisms still need to be considered**. For instance, convergence of the internet with digital television presents opportunities for engagement, but there are still technical and usability issues to be resolved relating to older people's effective interaction with digital television as an enhanced information and communication technology.

5 Hassenzahl, M. (2010) Experience Design. Technology for All the Right Reasons. USA: Morgan & Claypool Publishers.

6 Sayago, S., Sloan, D. and Blat, J. (2011) Everyday use of computer-mediated communication tools and its evolution over time: an ethnographical study with older people. Interacting with Computers, 23(5), 543-554.

More focus on sustaining use of the internet over time

Research and policy on older people as internet users is dominated by a focus on achieving rapid and mass adoption of the internet, exemplified by the competitive analogy of the Race Online 2012 initiative. But, extending this analogy, what happens when Race participants reach the finishing line – in this case, once they go online? **There is far less effort exploring means to support older people in sustaining internet use** – people who have been using the internet for a particular purpose, have already identified a role for it in their everyday life, and who would be adversely affected if they could no longer use the internet.

Government policy that is based on an increasing proportion of UK citizens engaging with online services will be damaged if citizens who are assumed to have become internet users then abandon use. **Short-term efforts – making available cheap computers and providing initial training – must therefore be partnered with more effort in identifying and applying interventions that enable older people to continue using the internet as long as they are able and willing to**. This means further academic research looking into technology use over time is needed, as we have noted above; more effort to understand the most effective social and technical support environments and systems that genuinely help older internet users[7].

Often, in reporting statistics on older people's use of the internet, the term "disengaged" is used as a term to categorise people who have made a conscious decision not to use. In reality, disengagement may be involuntary – but we have **little evidence to help us identify and understand the potential risks to continued use, and take steps to minimise these risks**. We know that there are many potential reasons why an older person may give up using the internet. For instance, the cognitive demands placed on an older person by changes to a familiar website's design and layout, their software or operating system may cause prior knowledge to become redundant, and the ability to unlearn and relearn how to complete a previously familiar task becomes harder as we grow older. There is clearly **a responsibility to be aware of the impact of such changes – on the technology industry, on website providers, and for those responsible for administering computers** used by older people to engage with the internet.

We hear many stories of technology intended to help older people use the internet that sits unused in a communal space, because there is no support system to diagnose and overcome technical or usability problems. While some volunteering systems have worked outstandingly for decades[8], others might attract either willing helpers who have insufficient technical knowledge or teaching skills to successfully solve problems and allow older people to retain knowledge over time, or highly capable technology experts who are unable to provide support at an appropriate

7 This is the research focus of the multi-disciplinary SUS-IT Project: **http://sus-it.lboro.ac.uk/**

8 Agora is a community-based initiative in Barcelona, supporting older people as technology users: **http://www.edaverneda.org.**

level. We have seen that many older people, of different nationalities, prefer to take their own handwritten notes, which are used as a regular reference. **If these notes are not available at a particular time, ability can decline as a result**. How can we design technologies that support and enrich the activities and experiences of older internet users?

There is a role for technical solutions to help improve usability and the user experience for older internet users, discussed later, but more attention is needed on understanding and addressing weaknesses in the **complex social issue of supporting older people in sustaining the ability to use the internet successfully for as long as they wish**.

Be more effective in accommodating age-related change in ICT design

One recurring area in initiatives to support older internet users is the issue of usability of websites and technologies used to access them. Improving ease of use and enjoyment of technology is of course a critical component in encouraging greater uptake and use – but general and repetitive calls for the technology industry and web content providers to 'do more' to take the needs of older people into account require more specific context and focus.

While drivers from Government that encourage inclusive technology design may be slow to have impact, there is already substantial enthusiasm and activity in academia and industry, particularly the grass-roots web design industry, that values the need to think about diversity amongst internet users and accommodate this diversity in design. Interaction Design, User Experience Design and Usability Engineering are three overlapping terms used to describe practices that are aimed at better understanding how technology can be successfully used for its intended purpose, designed sympathetically for its intended audience and context of use. Inclusive or Universal Design focuses specifically on the need to ensure that design takes into account the particular issues that may face older and disabled ICT users[9]. We have already noted that, as we age, changes take place in visual, hearing, dexterity and cognitive capability, and we know that these changes are often dynamic and unpredictable. What is less well known is the effect of these changes – which may happen in combination – on a person's ability and willingness to use ICT.

Guidelines exist for designing websites that can be successfully accessed and used by people regardless of any disability they may have – including age-related capability change[10]. However, providing a successful and inclusive user experience for older people requires much more effort

9 Explored in depth in Keates, S. and Clarkson, J. (2003) Countering Design Exclusion – an Introduction to Inclusive design. Springer.

10 The World Wide Web Consortium (W3C) Web Accessibility Initiative (WAI) produced a Literature Review of Ageing and Web Accessibility, which summarises web design guidelines for older people: **http://www.w3.org/TR/wai-age-literature/**

than simply following guidelines[11]. The challenge is for web designers and developers to adopt user-centred, inclusive web design as a default approach, rather than something that is done on request and in isolation of wider user experience goals. Extending user experience activity to cover the diverse nature of older web users is essential to provide genuinely positive online experiences.

New interaction methods, involving tablet computers and smartphones, offer new ways of enabling older people to engage with the internet in more goal-oriented ways, reducing the need to understand what can be a complex conceptual relationship between browser, search engine and website. **Use of metaphor** and analogy can be a powerful design aid to ease comprehension of a web resource. Metaphors chosen by young designers may be unfamiliar to an older audience, and usability may be reduced rather than improved as a result. How can we best take advantage of the life experience of an older generation to make use of metaphors familiar to them when designing online experiences? Design approaches that attempt to understand and take advantage of older people's familiarity with a now obsolete technology[12] might help to reduce the learning curve and improve usability of the technology of today and tomorrow – a challenge that otherwise is likely to persist into future generations, as new technology paradigms emerge.

Mainstream adoption of assistive technology

With age-related capability change, older internet users may require support to compensate for the effect of declining visual acuity, hearing or manual dexterity on their ability to use their computer. Traditionally, this might be provided either via a dedicated assistive technology device or software solution, but this presents problems of awareness (do people who might benefit from the solution know it exists?), appropriateness (is the assistive technology appropriate for the older person's needs?) and acceptability (will the person be willing to use the technology, given that it might be seen as stigmatising or labelling the person as requiring special assistance[13]), which can lead to stigmatisation and rejection. So, internet enabled devices that integrate features that allow adaptation of content and interaction methods in a way that effectively meets an individual's needs while minimising any stigmatising effect. Apple's iPad is widely acknowledged as having led the way here as a highly desirable consumer device that also offers a range of accessibility features from audio output to screen zooming; but more effort is required to seamlessly introduce simple but obvious accessibility features to consumer devices.

11 An insightful consideration of the limitations of current approaches to web accessibility is provided in Hassell, J. (2011) Web Accessibility Myths 2011 – a call for accessibility advocates to be more business-minded: **http://www.hassellinclusion.com/2011/12/accessibility-myths-2011/**

12 This has been described as the Technology Generation Effect; Chris Lim's Generation Timeline Tool shows promise as a design aid. See Lim, C. (2010) Designing inclusive ICT products for older users: taking into account the technology generation effect, Journal of Engineering Design, 21: 2, 189-206.

13 Graham Pullin's book Design Meets Disability explores the challenge of designing assistive technology that is desirable and socially acceptable.

Cognitive support

Age-related changes in cognitive capability can reduce an individual's ability both to successfully complete familiar computer-aided tasks and to learn to complete new tasks. There has been activity providing simplified computers targeted at older people, motivated by a desire to reduce the cognitive challenge of setting up and using a device that, for many people, is likely to be used for relatively few tasks, but as we have seen, there is a danger that 'special' computers stigmatise and pigeonhole people as needing simplified, dumbed-down products. By contrast, a more subtle focus on reducing or hiding unnecessary or rarely-used features can make existing products easier and more enjoyable to use.

Again, there is potential for tablet, touchscreen computers, like the iPad, to reduce cognitive demands on users. Here, a combination of touchscreen interfaces and apps allow a much more direct and immediate way for users to select, launch and interact with specific apps. The increased size of tablet computer screen can reduce the difficulty people with reduced dexterity and/or vision might have in selecting a particular on-screen option on a smaller device. At the time of writing, though, we have yet to see a significant body of empirical evidence comparing tablet computers with desktop computers in terms of ease of use for older people, but this is a clear area for ongoing attention and support.

Inclusive design and procurement

A lack of awareness of inclusive design by those responsible for commissioning or procuring web resources – from large corporate organisations to small non-profits – has also contributed to low levels of web usability and accessibility. The launch in 2010 of a British Standard on Web Accessibility[14], specifically targeted at the commissioning and procurement process has the potential to raise the profile of accessibility and influence the web development industry. Here, the research and policy challenge is to support adoption of, and measure the impact of BS8878 on organisations' approach to inclusive design of web resources, and in particular to gather evidence of resultant improvements to usability for older people of the web.

14 BS 8878:2010 Web accessibility - Code of practice. British Standards Institute.

Conclusion

We will conclude by making the following recommendations for research and policy activity going forward:

- Acknowledge and accommodate **diversity amongst older people** in research and design activity.
- Design to take into account the **strengths of older people as ICT users**, while compensating for, but not focusing only on, their limitations.
- Think more creatively about **increasing the quality of the online user experience** for older people; involve older people as partners in internet experience design from the earliest stages of ideation and concept development, through to evaluation.
- Similarly, ensure that **older people are involved**, through initiatives such as citizens' juries, in **decision-making relating to research and policy** on internet use and older people.
- Increase focus on supporting **sustained successful use** of the internet in later life.
- Increase efforts on **improving quality of mainstream technologies** rather than specialised, simplified solutions that may bring with them social stigmatisation.
- Shift focus to **studies of older people's use of the internet over extended periods of time**, in order to learn about patterns in adoption, usage and skills acquisition; impact on use of significant life-events and the impact of age related capability change.
- Recognise, understand and take into account older people's **rich life experience** in the design and development of innovative and successful internet technology.
- Increase focus on **using the internet to enhance quality of life** through, for instance, creative play, enhancing social networks and reducing, rather than increasing, social isolation.

About Nominet Trust

The internet offers a phenomenal opportunity to stimulate new forms of collaboration, to mobilise new communities of interest, and to unleash the imagination of millions of users in addressing specific local and global challenges.

At Nominet Trust we are committed to making these opportunities a reality - for as many people as possible.

Nominet Trust is a UK-based social investor that supports internet-based initiatives that contribute to a trusted, accessible internet used to improve lives and communities.

Through our on-going research programme we identify specific areas of need and channel funding towards initiatives designed to make a significant difference to people's lives.

Founded in 2008, we have already supported hundreds of pioneering initiatives including; the first online clinical research trial, new approaches to intergenerational learning and online peer mentoring to support those experiencing bullying.

To find out more about our work or how you can apply for funding, please visit:

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